Model 9017 Z/Y-Purge Interface: User's Manual

October 2015

FM APPROVED

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1 Introduction

Thank you for selecting a DAISY solution for your hazardous area operator interface requirements!

This manual describes the general procedures for installing and operating DAISY Z/Y-Purge systems. The text portion of the manual also includes an overview of the theory behind the methods used to make electronic systems safe for hazardous areas. Section 9, Specifications, also contains an overview of system specifications, and Section 10, Drawings, includes mechanical drawings of each unit.

We are always working to improve our documentation. If you have any suggestions or requests, please forward them to our sales department at sales@Daisyinc.net, or to Daisy Data Displays, Inc., 2850 Lewisberry Road, York Haven, PA 17370, Attn: User Manual Coordinator.

2 Hazardous Area Safety Methods: Theory of Operation

2.1 Division 1: Z/Y-Purge Protection

The Z-Purge (Model 9017) and the Y-Purge (DAISY Enclosure Mounted) Systems are Electrically and Pneumatically the same. For the rest of this manual they will refer to as a Z-Purge. The I033-000002-03 Printed Circuit Board will be called the ZPA Assembly.

Z-purge systems are used for installing electrical equipment in hazardous areas (see National Electrical Code articles 500-504 and the NFPA 496, section 2-8).

A Z-purge system provides the protective purge and maintenance of safe gas flow to the enclosure; the purge system operation and the power and signal connections are controlled by the operator (as opposed to the automatic control provided by X-purge systems Model 9016). The purge system includes alarm contacts and a visible indicator to alert the user and possibly an automated control system in the event of the loss of pressure within the enclosure; that is, a failure of the protective safe gas flow or of enclosure integrity.

At start-up, the enclosure is purged of any possible flammable materials by applying a rapid flow of air through the enclosure. Prior standards simply required an exchange of four volumes of air through the enclosure. However, the standards now require that the volume of air passed through a given enclosure eliminate any possible flammable concentration of substances within the enclosure (the minimum of four volumes of exchange still applies). Factory Mutual Class Number 3620 (section 4.2, page 5) states, “When … concern exists that all compartments may not be purged, purging tests shall be conducted.” This requires consideration not only of the airflow and pressure, but also of the enclosure’s shape and the effect of equipment installed within the enclosure. DAISY’s systems have been fully tested under the supervision of Factory Mutual to ensure compliance with the standards of FM 3620: 4.2.

After the enclosure has been purged, the operator switches the purge control to the “operate” setting. At this setting, the air flow rate is reduced to conserve the protective gas while still maintaining a positive pressure within the enclosure to prevent the entry of flammable materials. At this time, the operator can apply power to the electronics within the enclosure. In the event of a loss of protective pressure within the enclosure, the alarm system will indicate the failure. The operator must then shut off power and signal connections at a safe disconnect location.

Y-purge systems are used for installing electrical equipment in Division 1 hazardous areas (see National Electrical Code articles 500-504 and the NFPA 496, section 2-9). Essentially, the installation of a Y-purge on a DAISY enclosure in a Division 1 area reduces the rating inside of the enclosure to Division 2. This allows less costly Division 2 electronic equipment to be safely used in Division 1 areas.

3 Pre-Installation Testing

Before installing your system in its final location, you may wish to test it to verify that the purge system is functioning correctly.

3.1 Division 1 Z-Purge Test

IMPORTANT NOTE: Pre-installation testing should *always* be conducted in a safe area.

Equipment Required

- Clean, dry purge air or inert gas supply equipped with local water/oil separator or filter capable of supplying 150 SCFH at 20 - 100 PSI
- Fittings and tubing for purge air or inert gas supply (0.25" NPT Male to connect to the inlet of the purge system)
- Local air pressure shutoff valve

Procedure

1. Place the unit in a safe area near a source of the purge gas to be used (compressed air line or other inert gas source).
2. Through a cord grip or other cable-sealing device, bring AC power into the enclosure. **Be sure that the AC power is off.** Connect the AC power temporarily to the Z-purged unit (see drawing E009 at the end of this manual).
3. Temporarily install a pressure regulator, water/oil separator or filter, shutoff valve, pressure relief valve, and pressure gauge in the purge air or inert gas line (see drawing P015 at the end of this manual.).
4. **Bleed the purge air or inert gas line to insure that dirt, moisture, and other contaminants are cleared from the line prior to connecting the line to the unit!**
5. Connect the purge gas line to the inlet of the regulator on the Purge Unit.
6. Apply air or inert gas to the enclosure. The enclosure may "swell" slightly as the internal pressure increases. This is normal and is not a cause for concern. DAISY enclosures are designed to release excess pressure. **DO NOT ATTEMPT TO OPEN THE ENCLOSURE WHILE IT IS PRESSURIZED!**
7. Turn the control valve to PURGE. Look at the flow meter on the front panel to verify that the flow rate is 150 SCFH. If not, readjust the purge regulator to set the flow to 150 SCFH.
8. If the flow meter does not read 150 SCFH, inspect the enclosure for blockage in the purge gas lines and take appropriate action to clear the blockage. If blockages are not obvious, verify that the purge air or inert gas is clean and dry.
9. Slowly turn the control valve to OPERATE. If the control valve is turned rapidly, the indicator ball in the flow meter may start oscillating. Look at the pressure gauge on the front panel to be certain that the internal pressure is 1.0" of Water Column. If not, reset the adjustment on the exhaust assembly on the so that the pressure gauge reads 1.0" of Water Column.
10. Slowly turn the control valve to PURGE. Make sure that the flow meter reads 150 SCFH. If not, readjust the regulator for 150 SCFH.
11. Slowly return the control valve to OPERATE and apply power to the enclosure. The "Pressure Good" LED should be illuminated green. If not, check the internal pressure, it

should be between 0.4” and 10.0” of Water Column. The pressure good led must be illuminated green at this time. If it is not, please consult the factory.

12. If the “Pressure Good” LED is not illuminated green, the internal pressure is below 0.4” Water Column and the alarm is on. Turn the enclosure power off and repeat steps 2 though 6.

4 Installation

4.1 Power and Signal Wiring Requirements

Mounting Location
When mounting, Human Machine Interfaces (HMI) and Purge systems must be positioned to avoid radiated and induced interference. Do not mount the unit in close proximity to a device that generates strong radiofrequency interference or electromagnetic interference. HMI and Purge systems must be also positioned to avoid exposure to excessive heat. Do not mount the unit in close proximity to a steam line, heated vat or oven.

Gland Plates
Before modifications can be made, Gland Plates must be removed. Please note that metal shavings are detrimental to electronic systems.

Machining
Only make enclosure penetrations in designated locations. All metal shavings must be collected and removed.

Wiring Requirements
AC power inputs require dedicated circuits or feeds. Power from lines or circuits shared by motors, drives, welders, arc furnaces, or inductive lighting is not acceptable. Conduits for HMI and Purge power should be separated from other conduits to prevent radiated or induced interference. Devices that produce spikes, surges, and brownouts are detrimental to computers, and can corrupt data and interfere with purging systems. Do not use a transformer or other device to step down a three phase circuit to run a HMI or Purge System.

Communication wires and signals should be run in separate conduits and routed away from power conduits. Providing isolation to prevent emissions from other conduits is essential to data integrity. Long runs of parallel signal lines can cause “cross-talk” and corrupt data making communications unreliable or impossible.

DC power should be provided by a dedicated power source. If multiple units must be powered from a single DC supply, the power cables must be run directly from the unit to the supply. Chaining power from one unit to the next is unacceptable. Units can interfere with each other by developing noise due to the resistance of the wires. The filtering is provided by the source or power supply.

Additional Wiring
It is not permitted to run wiring through the unit that is nonessential to the unit. The cabinet is not a junction box.

Adding Additional Equipment
Installing additional equipment in units approved for hazardous classed environments violates the approval of the unit.

4.2 Pack-Seal Connection Instructions

A conduit seal is necessary for most equipment enclosures in hazardous areas. For Z-purge, they are always required. Please consult your local code for other instances and full details.

ALWAYS follow all NEC, NFPA, and local codes when installing conduit and pack-seals in hazardous areas! It is *very important* that knowledgeable personnel, familiar with national and local codes, supervise hazardous area equipment installations.

The sealing compound generally used for pack-seals is an inorganic, chemically setting, magnesium oxide base material, which develops a slight expansion while hardening into a porcelain-like body. Sealing Compound is supplied as a powder and need only be mixed with water to apply. Approximately one ounce of sealing compound is needed per cubic inch of space to be filled.

The sealing compound powder has a shelf life of six months when stored in unopened, tightly sealed containers in a dry location at 70°F.

Any equipment accidentally splashed with sealing compound should be cleaned with soap and water before the sealing compound cures.

Equipment Required

- Four PAC-Seal fittings, 1” NPT or 0.75” NPT for the Z-Purge, or sealing conduits. The PAC Seal and conduit size selected will depend on the size and number of conductors, which must be run to the unit. Check the NEC tables (Chapter 9, Table 4) to determine the conduit size necessary
- Conduit for electrical signals and for electrical power (separate runs), NEC and NFPA approved for use in hazardous areas
- NEC and NFPA approved flexible conduit if needed for difficult installations
- Fittings as required for permanent conduit installation NEC and NFPA approved for use in hazardous areas
- Signal cables, power cables, and connectors as required to mate with the equipment within the enclosure or cast aluminum box
- AC power switch for use in the safe area

Procedure

1. Threaded surfaces and pour locations should be cleaned with soap and water and thoroughly dried before proceeding.
2. On a Z-purge system, no entryway is provided by DAISY for power and signal conduits. These entries must be made by the end user. Select a point on the enclosure that matches well with the location of the incoming conduit. ***Be careful to ensure that the point you have selected is free from obstructions within the DAISY enclosure***. Being careful to protect the internal electronics, air pathways, and keyboard surface from flyings and other debris, drill or punch holes for the installation of the Pack-Seal fitting (1” NPT or 0.75” NPT, depending on application) in the wall of the enclosure.
3. Install two conduit runs (one signal, one power) between the Z-Purge system and AC power source (located in a safe area or in an explosion-proof box). See drawing P015 at the end of this manual.

4. Shake the sealing compound powder well before mixing with water. The recommended mix ratio is 5 parts powder to 1 part clean water, by weight. A 25mL vial of water has been provided with the compound to meet this ratio. Place 70°F water into a clean mixing container and gradually add powder to water while mixing. Continue mixing until a uniform consistency is obtained. Mixing may be done with a slow-speed mixer or by hand with a spatula. The minimum amount of water (as specified above) should be used as excess water reduces mechanical strength, increases shrinkage, and delays set time. Failure of the cement to adhere indicates setting has begun – discard cement, do not attempt to re-temper by adding more water.
5. The compound may be applied by pouring, casting, or mechanical dispenser. The sealing compound hardens with an internal chemical-setting action in 18 to 24 hours at ambient temperature. Working time of the sealing compound when the powder is mixed with water is approximately 30 minutes at 70°F. If accelerated curing is desired, low temperature oven drying at 180°F can be used. Do not expose the sealing compound to higher temperatures, constant water immersion, or steam environments while curing. If high humidity resistance is required in the cured product, a moisture-resistant lacquer or silicone coating should be applied to the exposed surfaces.
6. The packing fiber is made from an environmentally safe, non-asbestos material. It is easy to use and forms a positive dam to hold the compound. The fiber is placed around each individual wire or cable at both ends of the cavity for horizontal pouring in the PAC Seal so that the Sealing Compound can encapsulate each completely. For vertical pouring, the packing fiber need only be placed at one end. See drawing P002 at the end of this manual.
7. We recommend a special blend of lubricants, LUBT-2, for use with threaded joints. This lubricant is to be used to prevent galling of the pipe threads when threaded into a coupling, junction box, etc. It insures a quick release and undamaged male and female threads when parts are disassembled. The thread lubricant is high quality lubricant to be used in temperatures ranging from -40° to +50° F. It is recommended for use in a hazardous location. The PAC Seal Compound, packing fiber and LUBT-2 are available from Killark at http://www.killark.com/.
8. For enhanced reliability of the unit, install an AC line conditioner. AC power lines should be no smaller than 14 gauge and have a TRUE EARTH GROUND.

4.3 Purge Air Line Connection Instructions

4.3.1 For Division 1 Z-Purge Systems Model 9017

After the unit has been mounted in its final location in the hazardous area, it must be permanently connected to a purge air or inert gas line and checked for leaks and proper operation of the purge/pressurization system. Only when its pressure integrity has been established should electrical signals and power be brought "live" to the unit.

ALWAYS follow all NEC, NFPA, and local codes when installing purge systems in hazardous areas! It is *very important* that knowledgeable personnel, familiar with national and local codes, supervise hazardous area equipment installations.

Equipment Required

- Clean, dry purge air or inert gas supply equipped with local water/oil separator or filter capable of supplying 150 SCFH at 20 - 100 PSI
- Fittings and tubing for purge air or inert gas supply (0.25" NPT Male to connect to the inlet of the purge system)
- Local air pressure shutoff valve

Procedure

1. Mount the enclosure in the location in which it will be installed. This must be near the source of air or inert gas to be used for the purge system.
2. Install the pressure regulator, water/oil separator or filter, shutoff valve, pressure relief valve, and pressure gauge in the purge air or inert gas line (see drawing P015).
3. **Bleed the purge air or inert gas line to insure that dirt, moisture, and other contaminants are cleared from the line prior to connecting the line to the unit!**
4. Connect the line to the inlet of the regulator on the Purge Unit.
5. Apply air or inert gas to the enclosure. The enclosure may "swell" slightly as the internal pressure increases. This is normal and is not a cause for concern. DAISY enclosures are designed to release excess pressure. **DO NOT ATTEMPT TO OPEN THE ENCLOSURE WHILE IT IS PRESSURIZED!**

5 Start-Up Operation

5.1 Division 1 Z/Y-Purge Start-Up Operation

1. When the air, signal, and power connections are complete, replace and close all access doors and covers.
2. Turn the Control valve to PURGE. Look at the Flow Meter on the front panel to verify that the flow rate is 150 SCFH. If not, readjust the Purge Regulator to set the flow to 150 SCFH.
3. If the Flow Meter does not read 150 SCFH, inspect the enclosure for blockage in the purge gas lines and take appropriate action to clear the blockage. If blockages are not obvious, verify that the purge air or inert gas is clean and dry.
4. Slowly turn the Control Valve to OPERATE. If the Control Valve is turned rapidly, the ball in the Flow Meter may start oscillating. Look at the pressure gauge on the front panel to be certain that the internal pressure is 1.0" of Water Column. If not, reset the adjustment on the exhaust assembly on the so that the pressure gauge reads 1.0" of Water Column.
5. Slowly turn the Control Valve to PURGE. Make sure that the Flow Meter reads 150 SCFH. If not, readjust the regulator for 150 SCFH.
6. The size of your enclosure will determine the purge time, unless you purchased a Z/Y-Purge on a DAISY Enclosure, then follow the purge time stated on the product label. After purge cycle, slowly turn the control valve to OPERATE.

TABLE 3-1

Enclosure Size	Purge Time
1 cu. ft.	1 min. 45 sec.
2 cu. ft.	3 min. 15 sec.
3 cu. ft.	5 min.
4 cu. ft.	6 min. 30 sec.
5 cu. ft.	8 min. 15 sec.
6 cu. ft.	9 min. 45 sec
7 cu. ft.	11 min. 15 sec.
8 cu. ft.	13 min.
9 cu. ft.	14 min. 30 sec.
10 cu. ft.	16 min.
11 cu. ft.	17 min. 45 sec
15 cu. ft.	24 min.
20 cu. ft.	32 min.
30 cu. ft.	48 min.
40 cu. ft.	64 min. (1 hr. 4 min.)
50 cu. ft.	80 min. (1 hr. 20 min.)
60 cu. ft.	96 min. (1 hr. 36 min.)

IMPORTANT!
IT IS THE CUSTOMER'S RESPONSIBILITY TO DETERMINE THE PURGE TIME AND MARK THE ENCLOSURE ACCORDINGLY.

7. Apply power to the enclosure. The Pressure Good LED should be illuminated green. If not, check the internal pressure: it should be between 0.4" and 10.0" of Water Column. The

pressure good led must be illuminated green at this time. If it is not, please consult the factory.

8. If the Pressure Good LED is not illuminated green, the internal pressure is below 0.4" Water Column and the Alarm is on. Turn power off to the enclosure and repeat steps 2 though 6.

6 Operation Notes

6.1 Division 1 Z-Purge

When using a Z-purge system, it is the operator's responsibility to disconnect power and signal paths in the event of a purge failure (that is, if the pressure in the unit falls below a preset level). Such a failure is indicated by several means. DAISY units are equipped with both an indicator light (the "Pressure Good" LED shown on drawing P017) and an internal pressure meter (shown on the same drawing). If the "Pressure Good" indicator is extinguished, or if the internal pressure meter is in the red zone below 1" of water column, the operator should immediately disconnect power and signal connections to the unit using switches in a safe area.

DAISY's Z-purge systems are also equipped with alarm contacts that switch state simultaneously with the "Pressure Good" indicator. These can be connected to an alarm system or supervisory control system to provide further indications to the operator and/or the supervisory system. The operation of the alarm contacts and the "Pressure Good" indicator light is detailed in the flowchart shown in Figure 6.1 and in Table 6.1 on page 11.

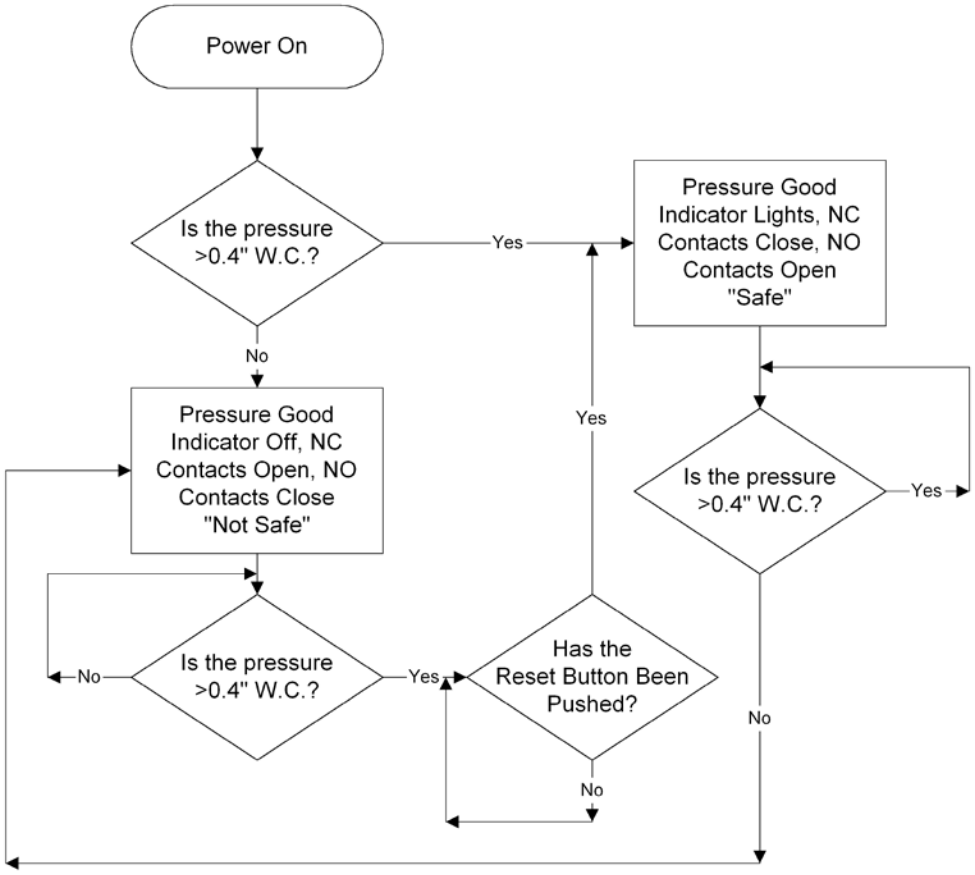

Figure 6.1 Z-Purge Alarm Logic

Power is	Pressure is	NC1 & NC2 are	NO1 & NO2 are	Pressure Good LED
Off	< 0.4" W.C.	Closed	Open	Off
Off	> 0.4" W.C.	Closed	Open	Off
On	< 0.4" W.C.	Open	Closed	Off
On	> 0.4" W.C.	Closed	Open	On

Table 6.1 Z-Purge Alarm and Indicator States

7 Customer Service

All Daisy systems pass detailed quality control configuration and inspection before being shipped. Daisy strives to create the highest quality systems, and chooses top quality parts. However, like most electronic devices, units may experience issues over time. Should you experience problems, or have any further inquiries or comments, please contact Daisy's customer service department:

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Equipment returned to DAISY for service must be accompanied by a valid return merchandise authorization (RMA) number. Anything shipped to DAISY without a valid RMA number will be refused. Please contact customer service for an RMA number; **be prepared to provide model AND serial numbers to help identify your equipment**. Typical I.D label shown below with Serial and Model numbers highlighted.

You may be able to trouble shoot problems yourself. To save time and money, please consult the trouble-shooting guide in this manual.

8 Trouble-Shooting Guide

8.1 Division 1 Z-Purge Trouble-Shooting

PROBLEM	POSSIBLE CAUSE	SUGGESTED SOLUTION
The flow cannot be adjusted up to 150 SCFH during purge	Improper flow meter reading	For correct operation, the purge unit must be mounted vertically so that the flow meter is vertically plumb
	Improper regulator adjustment	Adjust the air inlet regulator to increase air supply
	The purge control is not set to purge	Check the position of the control valve to ensure that it is set to "Purge"
	Insufficient air supply	Check your purge gas supply to ensure that it can supply 150 SCFH. If you cannot achieve 150 SCFH, then purge times must be recalculated. Contact DAISY customer service for assistance.
	Restrictions in the air supply line	Check your air supply line for blockages and kinks
	Contamination in the air supply	Ensure that the purge gas supply is clean, dry, and free of oil – a water/oil separator should be installed near the connection to the purge control
	Restrictions in the purge line from the purge control into the enclosure	Ensure that the purge line from the purge control into the enclosure is not kinked, has no internal obstructions, and is unrestricted at its open end (at least 0.5" from any object in the path of the air flow)
During operation (control valve set to "Operate"), the internal pressure does not reach/will not maintain 1" of water column	The enclosure is not sealed and is leaking	Ensure that all access doors are closed and latched. Ensure that all access panels are closed and sealed. Make sure no unsealed holes or openings are present in the enclosure.
	Insufficient air flow	Adjust the regulator on the purge control to increase the air flow
	Pack-Seals are not poured	Pack-Seals must be poured in conduits entering the enclosure to prevent air from escaping via the conduit entry. Ensure that this has been done.
	Exhaust control valve setting incorrect	Adjust the purge control exhaust valve for a higher internal pressure. It may take several minutes for adjustments to this setting to take effect.
During operation (control valve set to "Operate"), the internal pressure does not reach/will not maintain 1" of water column	Restrictions in the air connections	Ensure that the air connection at the regulator is not kinked, has no obstructions, and is firmly connected.

PROBLEM	POSSIBLE CAUSE	SUGGESTED SOLUTION
The "Pressure Good" indicator does not light when the unit is powered	Incorrect power-up sequence	Power should only be applied to the enclosure **after** the internal pressure has reached 1" of water column or higher and when the full purge time has elapsed
	Insufficient internal pressure	The pressure within the enclosure must be within the operating (or "safe") range. If you are having trouble maintaining a suitable pressure, see the previous section of this trouble-shooting guide.
	Alarm board is not receiving power	Ensure that AC power has been connected to the unit, and that the power is turned on
	Voltage is set incorrectly	Ensure that the 120/240 VAC switch on the alarm board is set appropriately for your power source

9 Specifications

Materials

All materials comply with NEMA 4X standards.

Enclosure and Hardware	Stainless Steel

Mechanical

Purge Controller	6.75”H x 11.50”W x 2.75”D, 9 pounds
Interface Box	7.25”H x 12.25”W x 3.50”D, 5 pounds

See drawing M012 for dimensions.

Environmental

Operating Temperature	0° - 50° C
Storage Temperature	0° - 70° C
Relative Humidity	10% - 100% RH Non-condensing

Electrical

Voltage	120/240 VAC 60/50 Hz
Power	5W Maximum
Division 1 Z-Purge Alarm Relays	120 VAC or 30 VDC @ 3A

Air Requirements

Operating Pressure	1” of Water Column
Division 1 Z-Purge	150 SCFH Minimum 20 - 100 PSI Recommended at Inlet

10 Drawings

The following is a list of drawings in the order in which they appear:

Number	Description	Page
P015	Z-Purge Cable & Conduit Entry	20
M014	Z-Purge Dimensions	21
M012	Z-Purge Mounting	22
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P019	Z-Purge Over Pressure Exhaust	27
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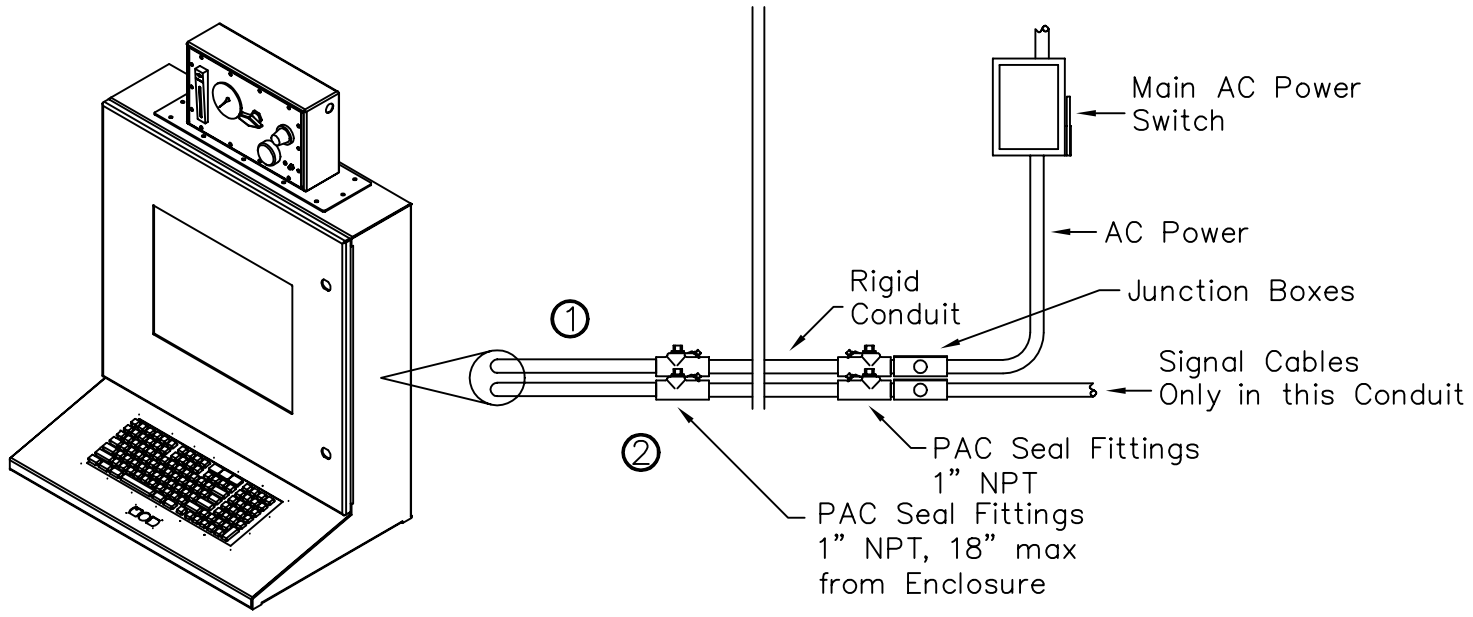
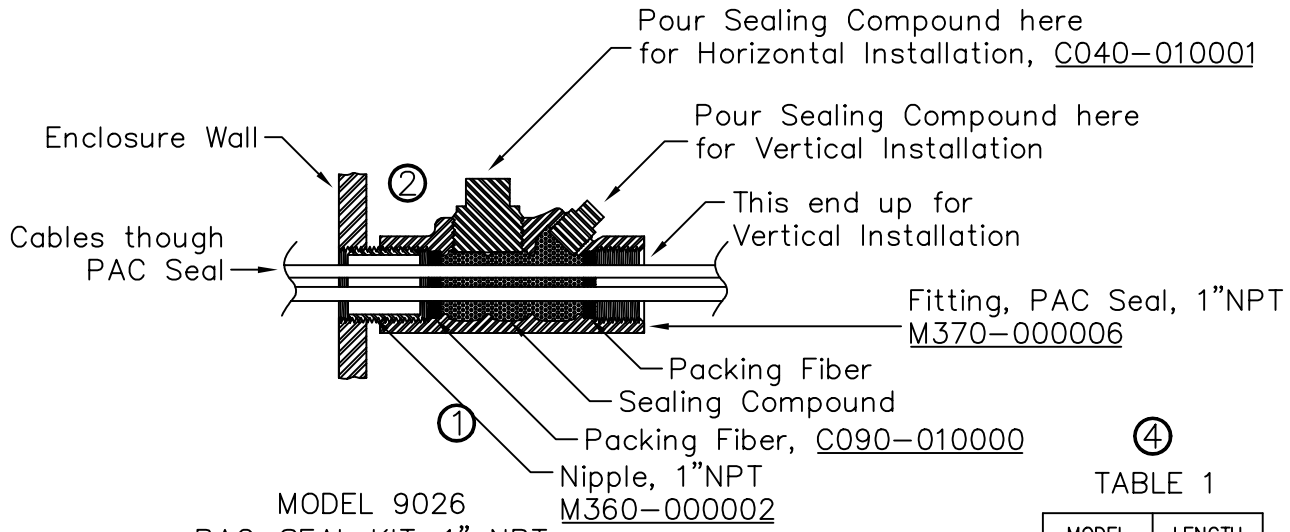
P020	Z-Purge Alarm Board Mounting	29



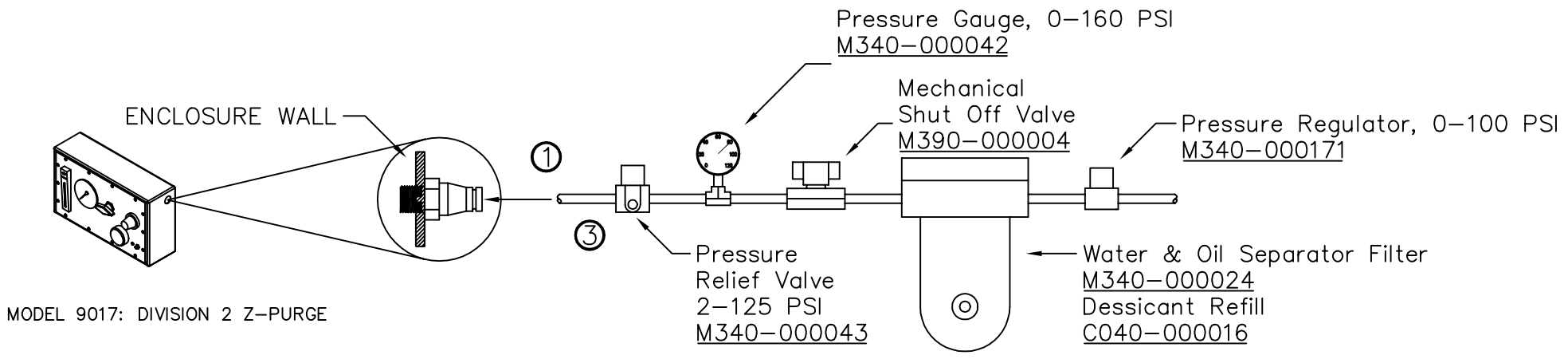
MODEL 9017: DIVISION 2 Z-PURGE MOUNTED TO AN ENCLOSURE



MODEL 9026
PAC-SEAL KIT, 1" NPT
REFER TO PAC-SEAL INSTRUCTIONS

④ TABLE 1

MODEL	LENGTH
9565	50'
9566	100'
9567	150'
9568	200'
9569	250'
9570	300'
9571	350'
9572	400'



MODEL 9017: DIVISION 2 Z-PURGE

MODEL 9047
AIR CONNECTION KIT
REFER TO AIR CONNECTION INSTRUCTIONS

NOTES:

① REFER TO ALL LOCAL CODES FOR CONDUIT ENTRY INFORMATION!
THE USER ASSUMES TOTAL RESPONSIBILITY FOR COMPLIANCE WITH ALL APPLICABLE CODES & PROCEDURES IN THE FINAL INSTALLATION.

② THE PAC SEAL FITTINGS CAN BE A MAXIMUM OF 18" FROM THE ENCLOSURE. PAC SEALS MAY BE ATTACHED DIRECTLY TO THE ENCLOSURE & THE RIGID CONDUIT EXTENDED IN ANY CONVENIENT DIRECTION. THE PACKING FIBER & THE SEALING COMPOUND MUST COMPLETELY SURROUND EACH CONDUCTOR OR CABLE.

③ THE AIR INPUT FITTING IS A 1/4" NPT FEMALE. THE AIR SOURCE MUST BE CLEAN DRY INSTRUMENT GRADE AIR CAPABLE OF SUPPLYING 35 TO 150 SCFH AT 20 – 100 PSI.

④ SEE TABLE 1 FOR THE DAISY DATA CAT5 INPUT CABLE MODEL NUMBER & LENGTH.

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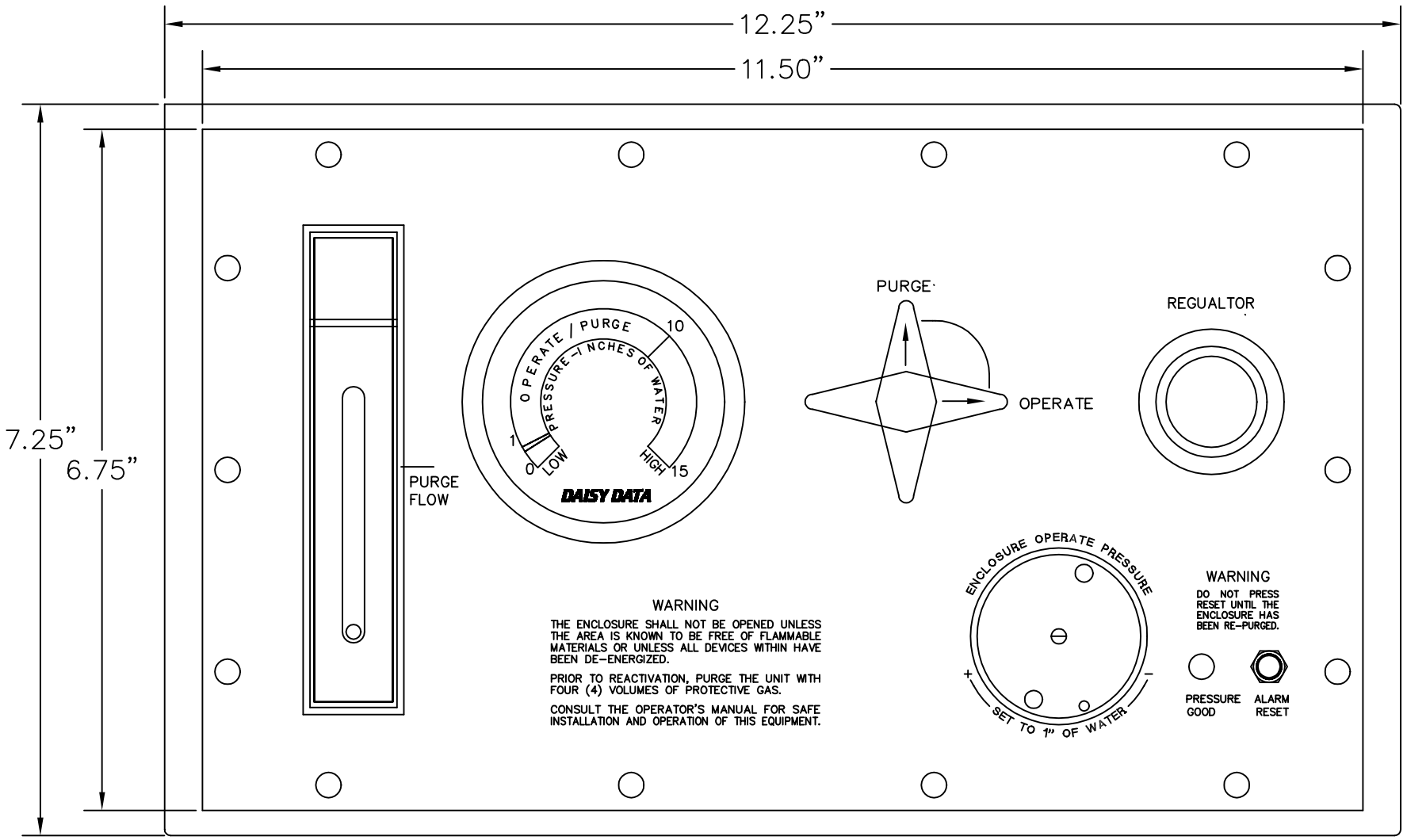
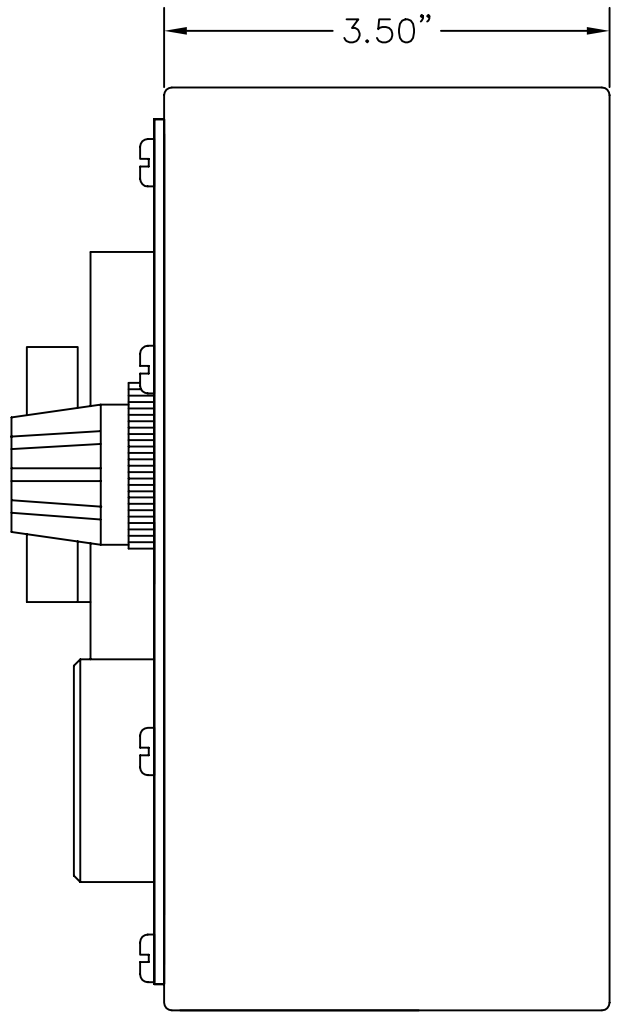
ELECTRICAL INPUT DRAWING

CABLE & CONDUIT ENTRY
9017 Z-PURGED

DRAWING NUMBER P015 | REV. -





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MECHANICAL ASSEMBLY DRAWING

MODEL 9017 Z-PURGE DIMENSIONS

DRAWING NUMBER M014

REV. -

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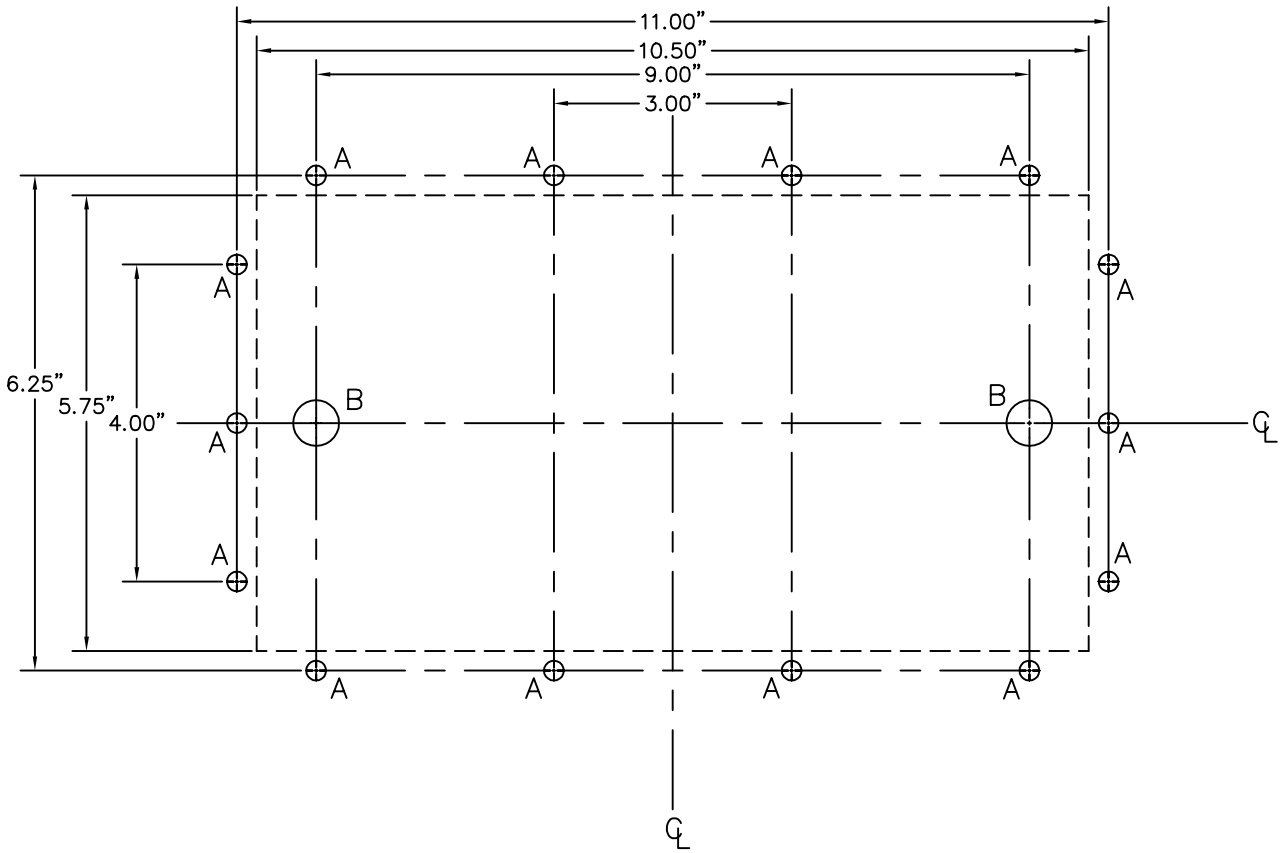
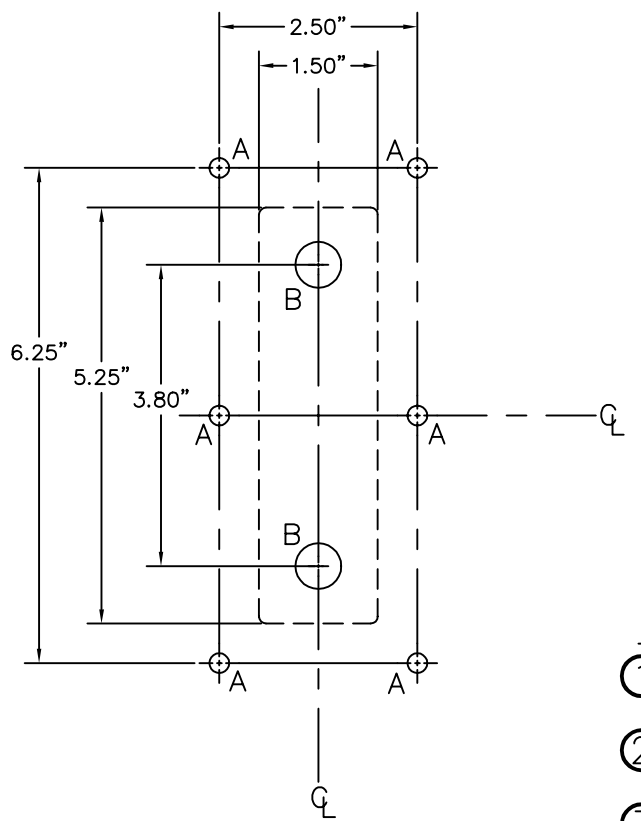
DIMENSION NOTES:

1. PURGE CONTROLLER WEIGHT: 9 POUNDS
2. INTERFACE BOX WEIGHT: 5 POUNDS

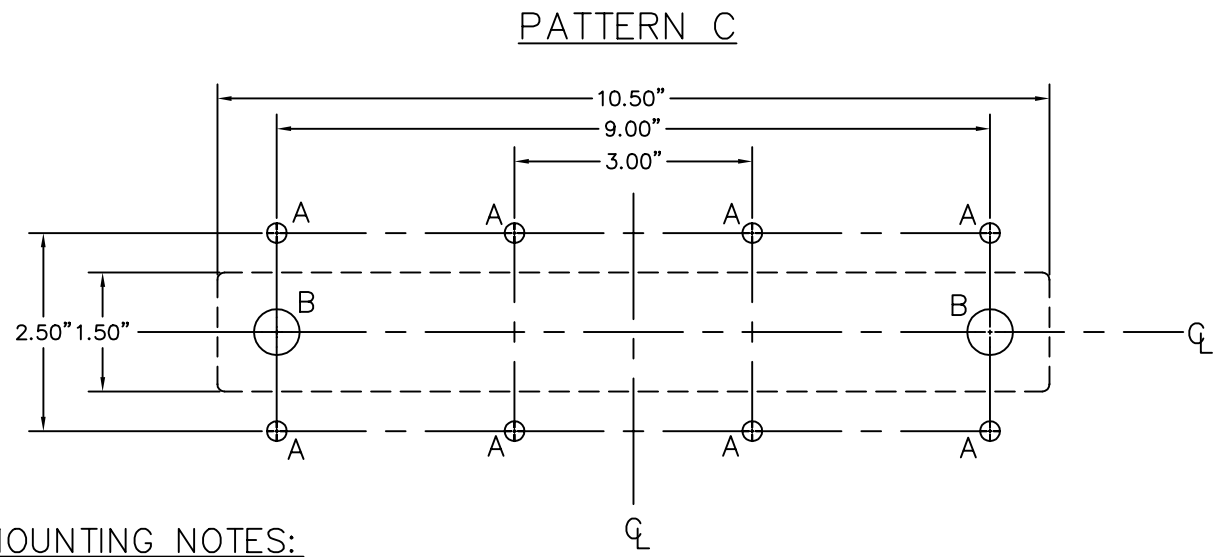
PATTERN A



PATTERN B



PATTERN C



MOUNTING NOTES:

1. "A" HOLES:
   MOUNTING HOLES FOR #10 HOLES.
2. "B" HOLES:
   1 5/32" DIA.; CLEARANCE HOLE FOR CONDUIT AND AIR EXHAUST.
3. CENTER LINE SYMBOL: ℄
4. CUT OUT DIMENSIONS: – – – –
   USE RECTANGULAR CUT OUT IF PREFERRED TO THE "B" HOLES.

DIMENSIONS ARE IN INCHES

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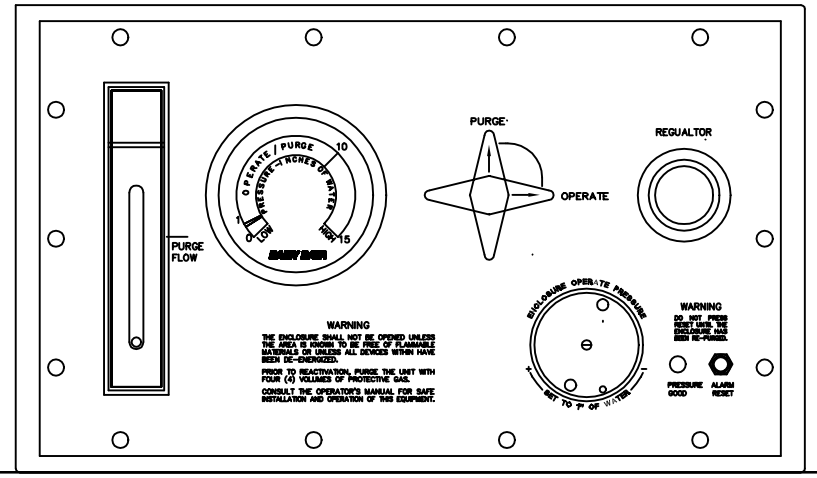
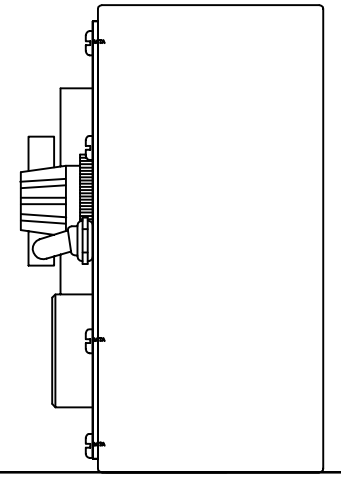
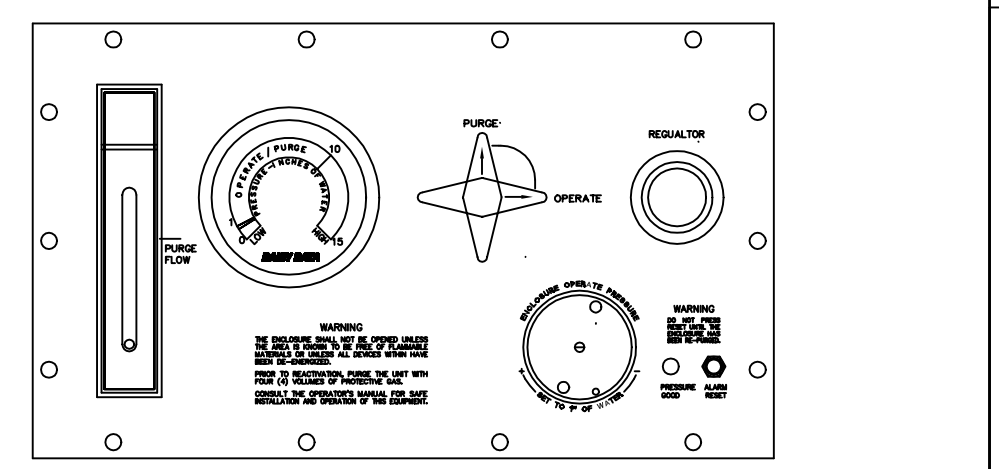
MECHANICAL ASSEMBLY DRAWING

Z/Y–PURGE MOUNTING

DRAWING NUMBER	REV.
M012	-


PURGE
OPERATE
REGULATOR
PURGE FLOW
WARNING
THE ENCLOSURE SHALL NOT BE OPENED UNLESS THE AREA IS KNOWN TO BE FREE OF FLAMMABLE MATERIALS OR UNLESS ALL DEVICES WITHIN HAVE BEEN DE-ENERGIZED.
PRIOR TO REACTIVATION, PURGE THE UNIT WITH FOUR (4) VOLUMES OF PROTECTIVE GAS.
CONSULT THE OPERATOR'S MANUAL FOR SAFE INSTALLATION AND OPERATION OF THIS EQUIPMENT.
ENCLOSURE OPERATE PRESSURE
WARNING
DO NOT OPEN WHEN ENCLOSURE HAS BEEN RE-ENERGIZED.
PRESSURE GOOD
ALARM RESET

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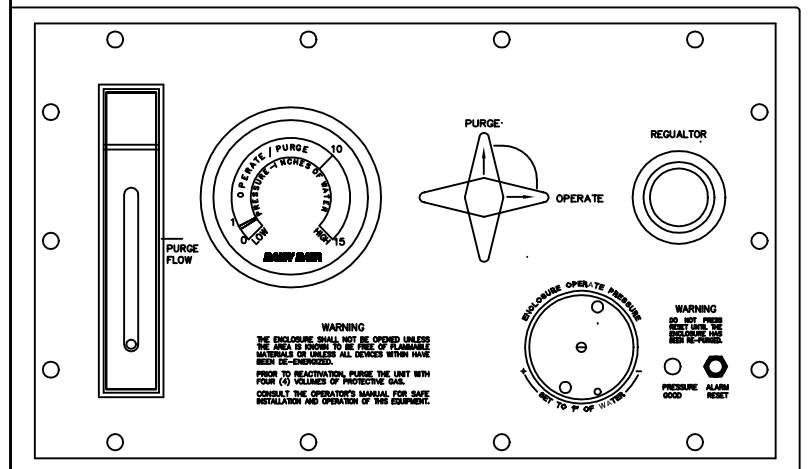
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OPERATE
REGULATOR
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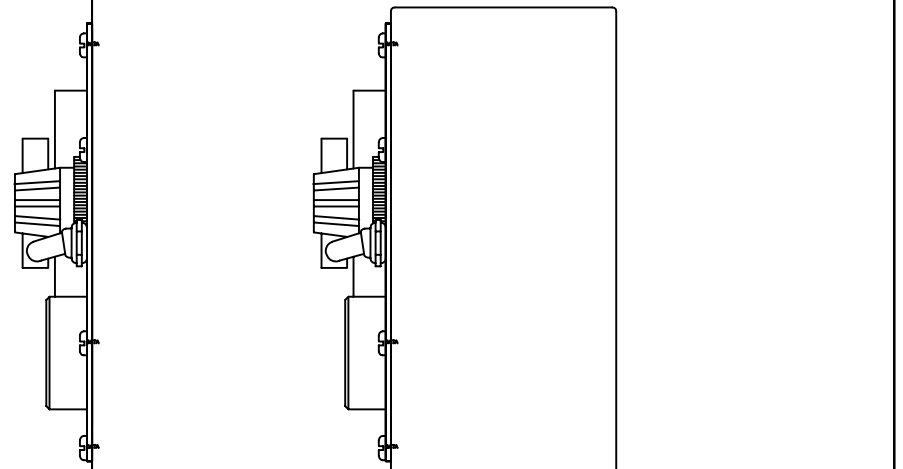
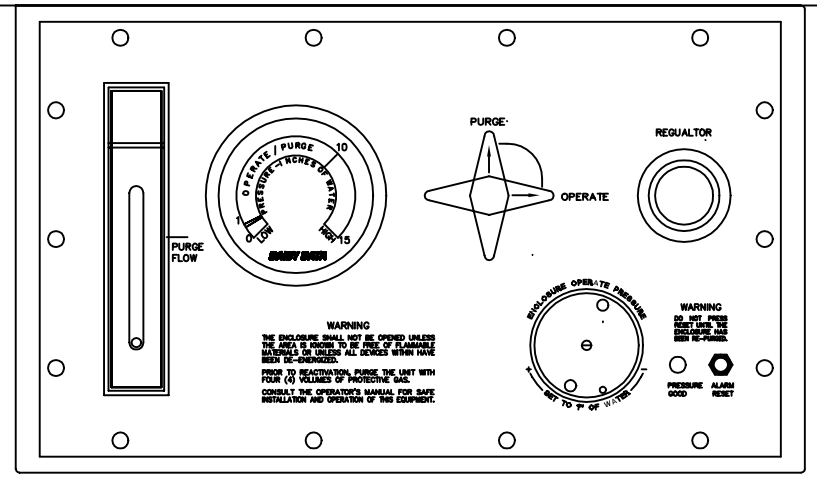
ENCLOSURE OPERATE PRESSURE
WARNING
DO NOT OPEN WHEN ENCLOSURE HAS BEEN RE-ENERGIZED.
PRESSURE GOOD
ALARM RESET




PURGE
OPERATE
REGULATOR
PURGE FLOW
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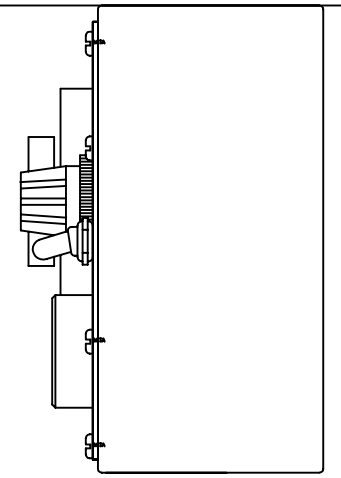

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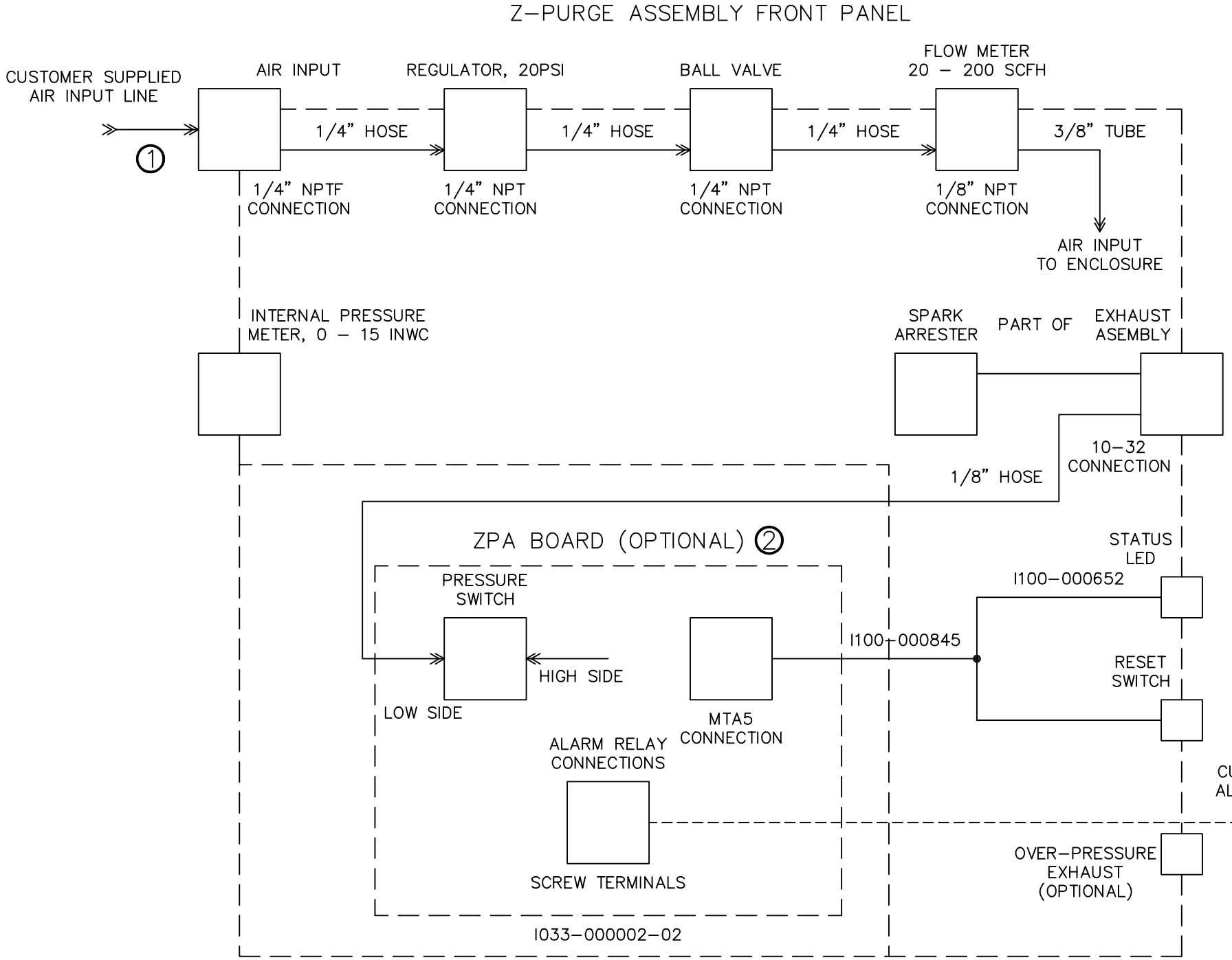
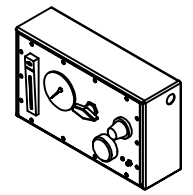
MECHANICAL ASSEMBLY DRAWING

MODEL 9017 Z/Y–PURGE MOUNTING OPTIONS

DRAWING NUMBER M017

REV. -





MODEL 9017: DIVISION 2 Z–PURGE

NOTES:

① THE AIR INPUT FITTING IS A 1/4" NPF FEMALE. THE AIR SOUCRE MUST BE CLEAN, DRY INSTRUMENT GRADE AIR CAPABLE OF SUPPLYING 35 TO 150 SCFH FROM 20 TO 100 PSI.

② THE Z–PURGE ALARM BOARD (I033–000002–03) IS OPTION NUMBER 550. THE ALARM BOARD WILL BE LOCATED ON THE BACK OF THE Z–PURGE PANEL.

③ FOR CABLE & CONDUIT ENTRY INTO THE ENCLOSURE, REFER TO DRAWING "P015".

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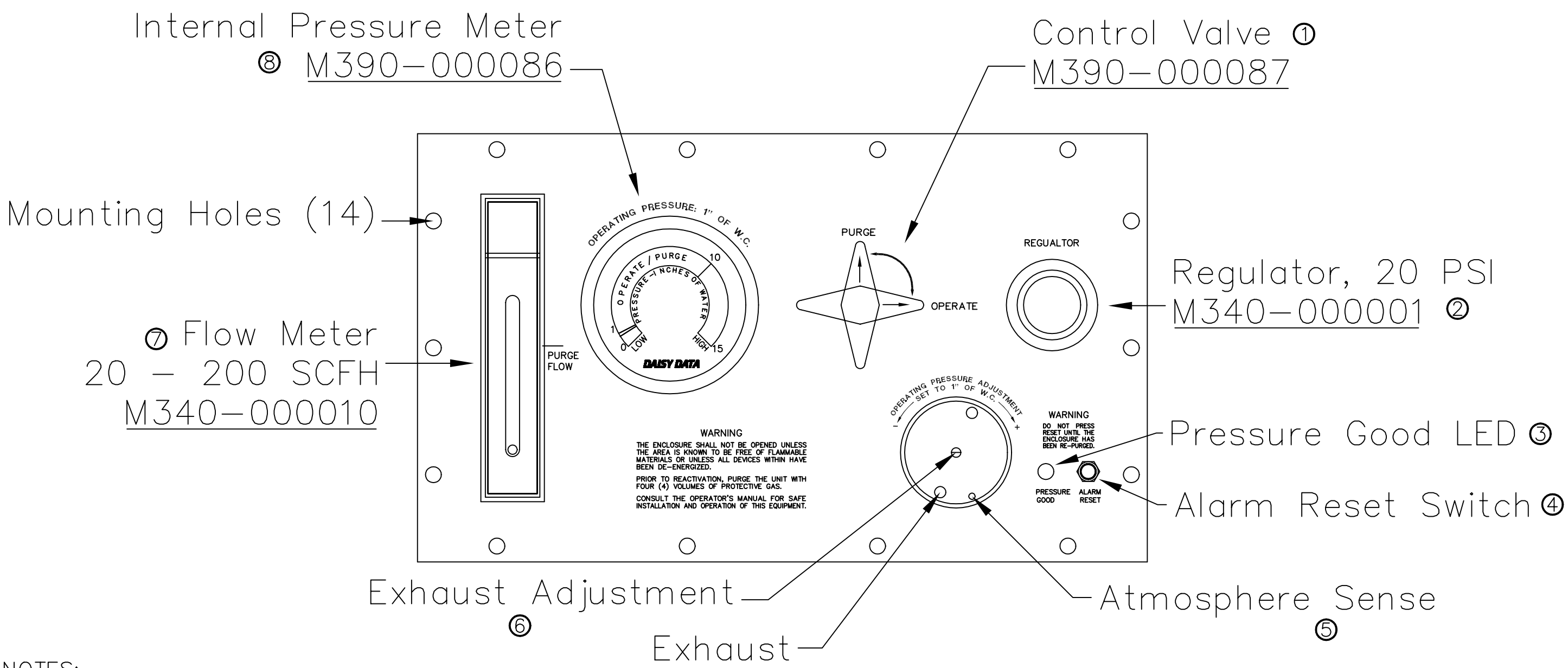
PNEUMATIC BLOCK DIAGRAM DRAWING

9017 Z–PURGE BLOCK DIAGRAM

DRAWING NUMBER P016 | REV. -



NOTES:

① CONTROL VALVE:
ADJUSTS THE AMOUNT OF AIR ENTERING THE ENCLOSURE WITH THE PURGE/OPERATE CONTROL. SWITCHES THE AIRFLOW INTO THE ENCLOSURE FROM PURGE TO OPERATE.

② REGULATOR:
ADJUSTS THE FLOW TO 150 SCFH DURING PURGE.

③ PRESSURE GOOD LED (PART OF THE ALARM BOARD OPTION):
THIS LED ILLUMINATES GREEN WHENEVER THE INTERNAL PRESSURE IS ABOVE 0.4" WC & THE ALARM RELAY IS RESET.

④ ALARM RESET SWITCH (PART OF THE ALARM BOARD OPTION):
USED TO RESET THE CUSTOMER CONTACTS AFTER AN ALARM CONDITION.

⑤ ATMOSPHERE SENSE (PART OF THE ALARM BOARD OPTION):
USED BY THE PRESSURE SWITCH ON THE ZPA BOARD TO GET DIFFERENTIAL PRESSURE BETWEEN THE ENCLOSURE & THE EXTERNAL ENVIRONMENT. THE HOSE TO THE ZPA BOARD IS 1/8" BLUE.

⑥ EXHAUST ADJUSTMENT & EXHAUST ASSEMBLY:
THE ASSEMBLY IS THE POINT AT WHICH PURGE AIR EXITS THE ENCLOSURE. THE ASSEMBLY ALSO INCLUDES THE ADJUSTMENT WHICH CAN CONTROL THE INTERNAL PRESSURE OF THE ENCLOSURE. WHEN THE CONTROL VALVE IS SET TO "OPERATE", ADJUST FOR A READING OF 1" WC ON THE INTERNAL PRESSURE METER.

⑦ FLOW METER:
MEASURES THE AMOUNT OF AIR WHICH IS ENTERING THE ENCLOSURE. THE READING IS TAKEN FROM THE MIDDLE OF THE SILVER BALL. DURING PURGE THE FLOW SHOULD BE 150 SCFH.

⑧ INTERNAL PRESSURE METER:
READS THE INTERNAL PRESSURE OF THE ENCLOSURE. THE DIAL ON THE METER IS CUSTOMIZED TO READ OPERATE, OVER PRESSURE & UNDER PRESSURE REGIONS.

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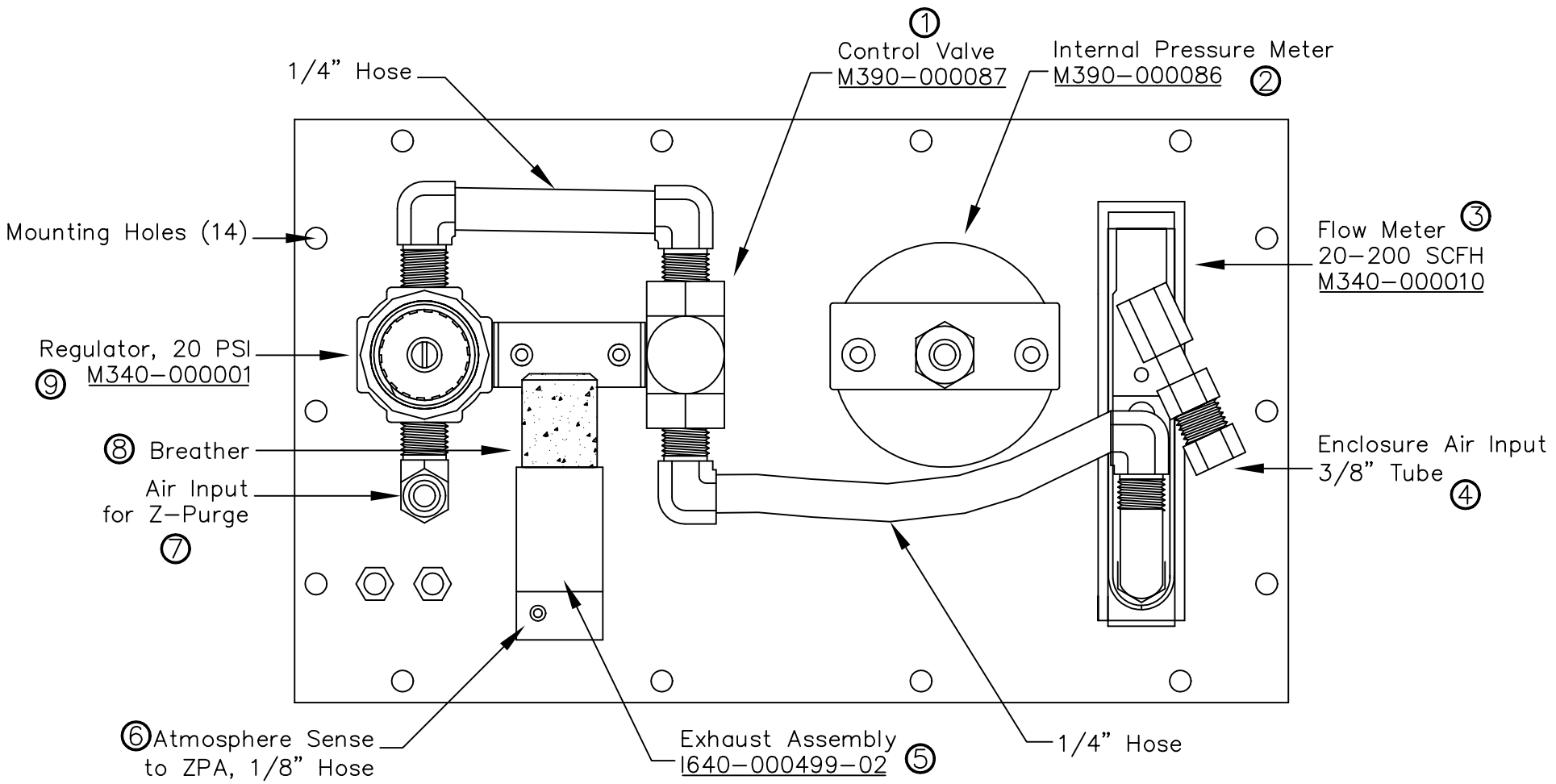
ITEM LOCATION DIAGRAM DRAWING

9017 Z-PURGE FRONT PANEL ITEM LOCATION

DRAWING NUMBER P017 | REV. -


1/4" Hose
① Control Valve M390–000087
Internal Pressure Meter M390–000086 ②
Mounting Holes (14)
Flow Meter ③ 20–200 SCFH M340–000010
Regulator, 20 PSI ⑨ M340–000001
⑧ Breather
Air Input for Z–Purge ⑦
Enclosure Air Input 3/8" Tube ④
⑥ Atmosphere Sense to ZPA, 1/8" Hose
Exhaust Assembly I640–000499–02 ⑤
1/4" Hose

NOTES:

① CONTROL VALVE:
ADJUSTS THE AMOUNT OF AIR ENTERING THE ENCLOSURE WITH THE PURGE/OPERATE CONTROL. SWITCHES THE AIRFLOW INTO THE ENCLOSURE FROM PURGE TO OPERATE.

② INTERNAL PRESSURE METER:
READS THE INTERNAL PRESSURE OF THE ENCLOSURE. THE DIAL ON THE METER IS CUSTOMIZED TO READ OPERATE, OVER PRESSURE & UNDER PRESSURE REGIONS.

③ FLOW METER:
MEASURES THE AMOUNT OF AIR WHICH IS ENTERING THE ENCLOSURE. THE READING IS TAKEN FROM THE MIDDLE OF THE SILVER BALL. DURING PURGE THE FLOW SHOULD BE 150 SCFH.

④ ENCLOSURE AIR INPUT:
THIS IS AIR INPUT INTO THE ENCLOSURE. THE OUTPUT OF THE FLOW METER IS A 3/8" TUBE. THE END OF THIS TUBE IS PLACED AT THE OPPOSITE CORNER FROM THE EXHAUST ASSEMBLY. THIS TUBE MUST BE UNBLOCKED.

⑤ EXHAUST ADJUSTMENT & EXHAUST ASSEMBLY:
THE ASSEMBLY IS THE POINT AT WHICH PURGE AIR EXITS THE ENCLOSURE. THE ASSEMBLY ALSO INCLUDES THE ADJUSTMENT WHICH CAN CONTROL THE INTERNAL PRESSURE OF THE ENCLOSURE. WHEN THE CONTROL VALVE IS SET TO "OPERATE", ADJUST FOR A READING OF 1" WC ON THE INTERNAL PRESSURE METER.

⑥ ATMOSPHERE SENSE (PART OF THE ALARM BOARD OPTION):
USED BY THE PRESSURE SWITCH ON THE ZPA BOARD TO GET DIFFERENTIAL PRESSURE BETWEEN THE ENCLOSURE & THE EXTERNAL ENVIRONMENT. THE HOSE TO THE ZPA BOARD IS 1/8" BLUE.

⑦ AIR INPUT FOR Z–PURGE:
ATTACHMENT POINT FOR THE ENCLOSURE'S PURGE AIR OR INERT GAS. THE AIR SOURCE MUST BE CLEAN DRY INSTRUMENT GRADE AIR, CAPABLE OF SUPPLYING 35 TO 150 SCFH AT 20 – 100 PSI. THE ENCLOSURE PURGE TIME IS 1 MINUTE 45 SECONDS per CUBIC FOOT WITH A FLOW OF 150 SCFH. AFTER THE PURGE IS COMPLETE, THE SYSTEM WILL REQUIRE ONLY AN AMOUNT OF AIR ENOUGH TO MAINTAIN THE ENCLOSURE PRESSURE AT 1" WC.

⑧ SPARK ARRESTER
PREVENTS FLAME FROM EXITING THE ENCLOSURE.

⑨ REGULATOR:
ADJUSTS THE FLOW TO 150 SCFH DURING PURGE.

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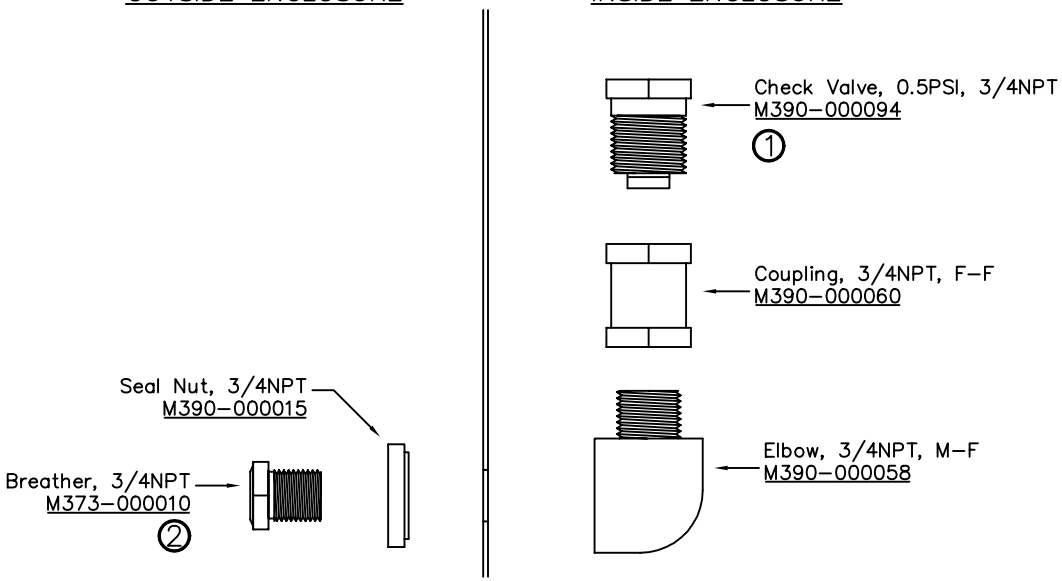
ITEM LOCATION DIAGRAM DRAWING

9017 Z–PURGE BACK PANEL ITEM LOCATION

DRAWING NUMBER P018 | REV. -

OUTSIDE ENCLOSURE

INSIDE ENCLOSURE



NOTES:

1. CHECK VALVE, 0.5 PSI:
   THE CHECK VALVE WILL OPEN IF THE INTERNAL PRESSURE IS GREATER THAN 0.5 PSI. THIS WILL PREVENT OVER PRESSURIZATION OF THE ENCLOSURE.
2. BREATHER:
   THE BREATHER ALLOWS AIR TO EXHAUST FROM THE ENCLOSURE, BUT DOES NOT ALLOW SPARKS TO EXIT THE ENCLOSURE.
3. THIS OPTION CAN BE MOUNTED EITHER ON THE SIDE OR THE BOTTOM OF THE ENCLOSURE. REMOVE THE ELBOW WHEN MOUNTING TO THE BOTTOM.

OPTION # 917: 0.5 PSI OVER PRESSURE EXHAUST

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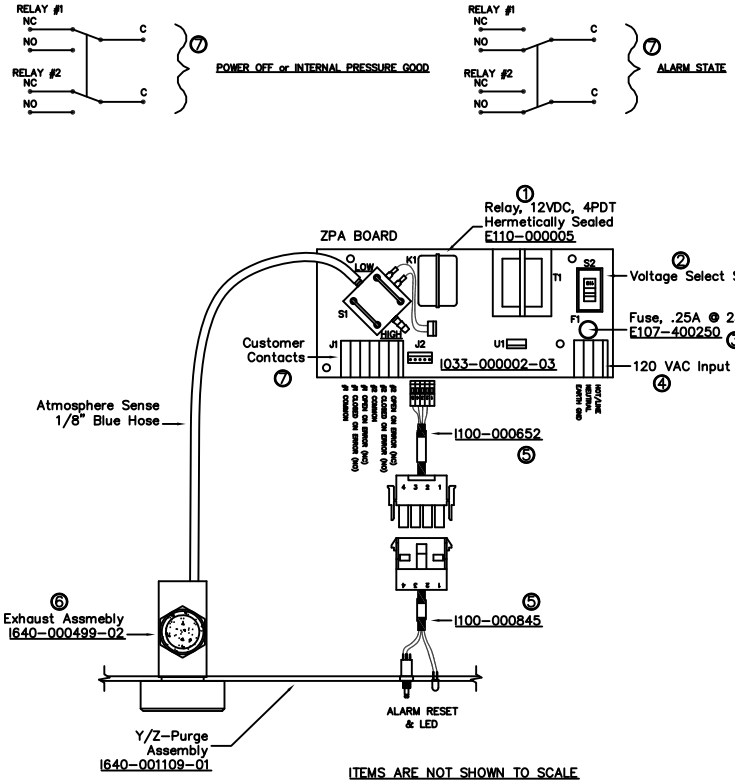
ITEM LOCATION DIAGRAM DRAWING

9017 Z-PURGE OVER PRESSURE EXHAUST

DRAWING NUMBER P019

REV. -



NOTES:

① RELAY:
THIS IS THE HERMETICALLY SEALED RELAY THAT CONTROLS THE CUSTOMER CONTACTS.

② VOLTAGE SELECT SWITCH:
THIS SWITCH SELECTS THE OPERATING VOLTAGE OF THE Y/Z-PURGE ALARM BOARD. THE VOLTAGES ARE 115 & 230 VAC.

③ FUSE:
THIS IS A 0.25 AMP, 250 VOLT FUSE.

④ AC INPUT:
THE 120/240 VAC INPUT. THE VOLTAGE TYPE IS SELECTED ON THE ZPA BOARD. THIS SUPPLIES POWER TO ENERGIZE THE RELAY & ILLUMINATE THE LED. THE CONNECTION IS MADE AT THE FACTORY, & SHOULD NOT BE SWITCHED WITH THE CUSTOMER CONTACTS.

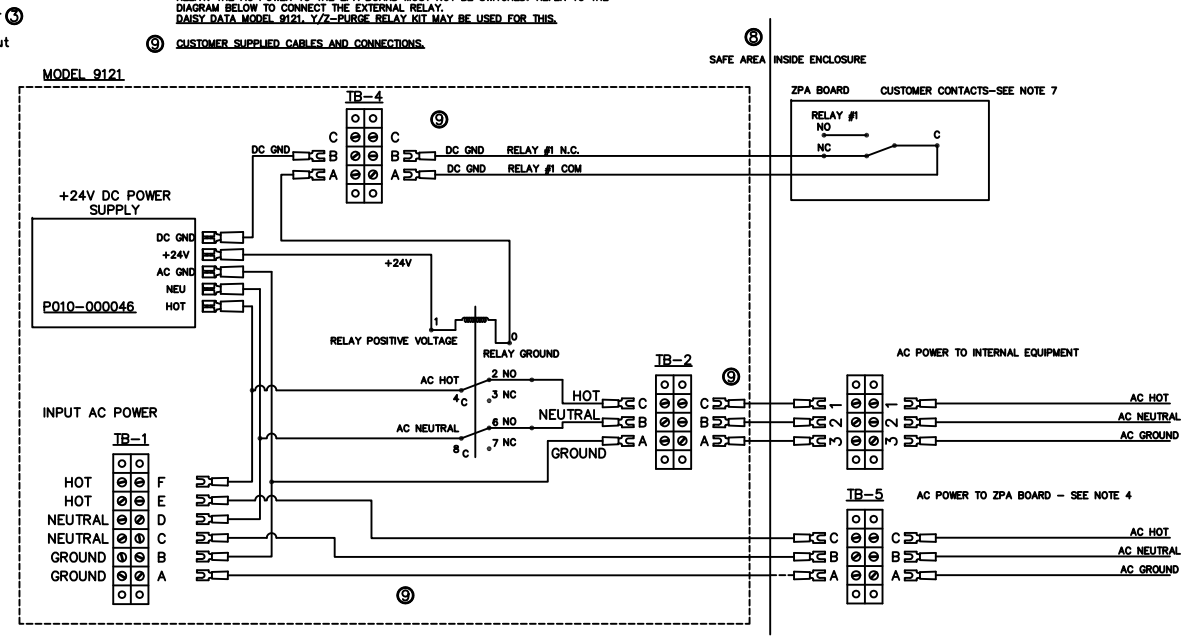
⑤ CABLES I100-000652 & I100-000845:
THESE TWO CABLE CONNECT THE STATUS LED & RESET SWITCH ON THE FRONT PANEL TO THE MTA5 CONNECTOR ON THE Y/Z-PURGE ALARM BOARD.

⑥ EXHAUST ASSEMBLY:
THE ASSEMBLY IS THE POINT AT WHICH PURGE AIR EXITS THE ENCLOSURE. THE ASSEMBLY ALSO INCLUDES THE ADJUSTMENT WHICH CAN CONTROL THE INTERNAL PRESSURE OF THE ENCLOSURE. WHEN THE CONTROL VALVE IS SET TO "OPERATE", ADJUST FOR A READING OF 1" WC ON THE INTERNAL PRESSURE METER.

⑦ CUSTOMER CONTACTS:
TWO SETS OF RELAY CONTACTS (2 NORMALLY OPEN & 2 NORMALLY CLOSED) ARE PROVIDED INSIDE THE ENCLOSURE. FOR THE USER TO WIRE EXTERNAL DEVICES. THE RELAY CONTACTS WILL SWITCH STATES WHEN PRESSURE INSIDE THE ENCLOSURE REACHES 0.4 INWC (PRESSURE GOOD). THESE CONTACTS CAN BE ESED TO KEY EXTERNAL ALARMS OR KEY A POWER RELAY TO SWITCH POWER TO INTERNAL EQUIPMENT.
THE CONTACTS HAVE A MAXIMUM SWITCHING CAPACITY OF 120 VAC/30 VDC @ 3A.
THE WIRE FOR THE CONTACTS SHOULD BE STRIPED 1/4" & TINNED WITH SOLDER. UNSCREW THE "GREEN" CONNECTOR TO OPEN THE CONTACTS, INSERT THE WIRE & SCREW CLOSED.

⑧ SWITCHING THE INPUT AC POWER WITH THE CUSTOMER CONTACTS:
THE AC POWER TO THE INTERNAL EQUIPMENT CAN BE SWITCHED USING A CUSTOMER SUPPLIED RELAY. THE AC POWER TO THE ZPA BOARD MUST NOT BE SWITCHED! REFER TO THE DIAGRAM BELOW TO CONNECT THE EXTERNAL RELAY.
DAISY DATA MODEL 9121, Y/Z-PURGE RELAY KIT MAY BE USED FOR THIS.

⑨ CUSTOMER SUPPLIED CABLES AND CONNECTIONS.



DIMENSIONS ARE IN INCHES	Daisy Data, Inc.	Y/Z-PURGE ALARM (ZPA) BOARD ITEM LOCATION	
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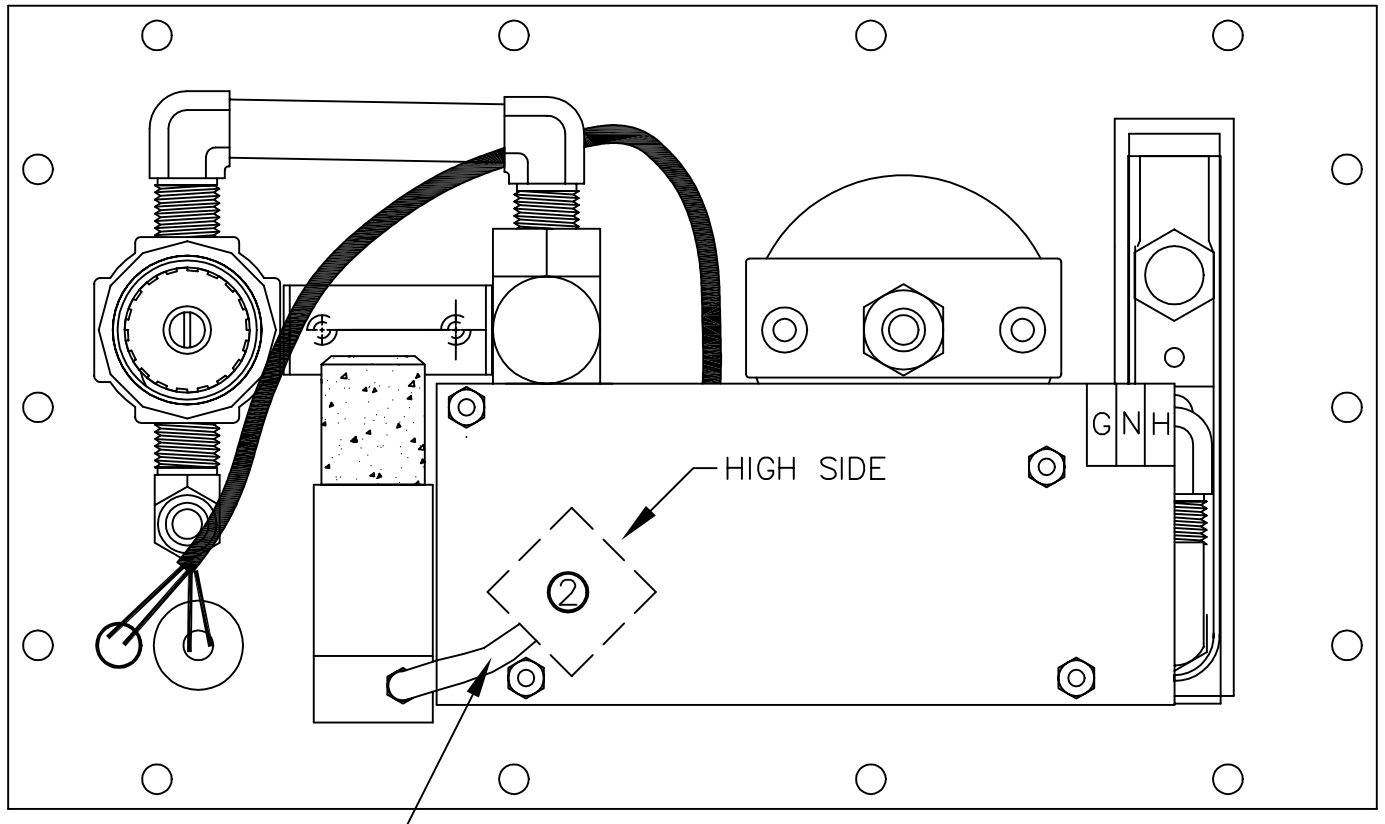
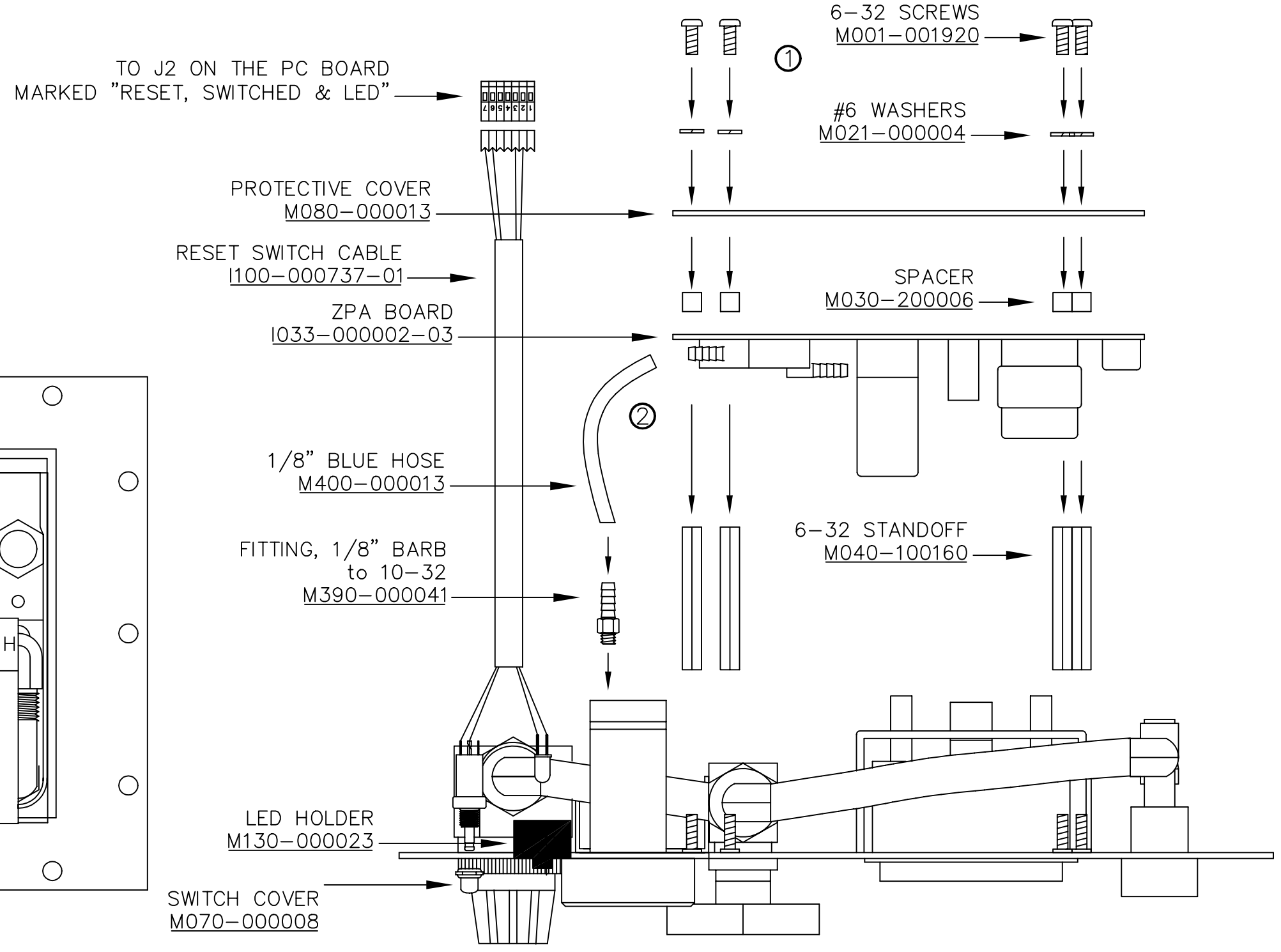
NOTES:

① INSTALLATION OF ALARM BOARD (ZPA) TO MODEL 9017:
REMOVE ALL POWER BEFORE INSTALLING THE ALARM BOARD!
THE OPTION 915, Z-PURGE ALARM BOARD, CAN BE INSTALLED IN THE FIELD BY FOLLOWING THE ASSEMBLY DRAWING. USE CARE NOT TO DAMAGE THE EQUIPMENT WHEN INSTALLING THE NEW HARDWARE & CIRCUIT BOARD.

② CONNECTING TO THE PRESSURE SWITCH:
USE CARE WHEN INSTALLING THE 1/8" BLUE HOSE TO THE "LOW" SIDE OF THE PRESSURE SWITCH ON THE ZPA BOARD.





DIMENSIONS ARE IN INCHES	Daisy Data, Inc.	9017 Z-PURGE ZPA INSTALLATION for OPTION 915	
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